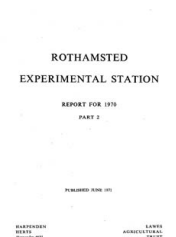


Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



Rothamsted Experimental Station Report for 1970 Part 2



[Full Table of Content](#)

Index

Rothamsted Research

Rothamsted Research (1971) *Index* ; Rothamsted Experimental Station Report For 1970 Part 2, pp 255 - 257 - DOI: <https://doi.org/10.23637/ERADOC-1-5>

INDEX

- Agrostis gigantea* in liming experiments, 102
Aluminium toxicity in acid soils, 103
- Barley
composition of grain, 103
effect of lime, P and K on, 98, 101, 103, 109–111
in Saxmundham Rotation I experiment, 69–79, 93
irrigation for, 164
yields compared at Rothamsted, Saxmundham, Woburn and nationally, 93
- Beans
damage to by simazine, 100
effect of lime, P and K on, 98–100
foraging of bees on, 192, 193
in Saxmundham Rotation I experiment, 69–79, 93
irrigation for, 166
pollination requirements, 184–185
yields compared at Rothamsted, Saxmundham, Woburn and nationally, 93
- Blowflies as crop pollinators, 186
- Brassicas
foraging of bees on, 193
pollination requirement of, 184
- Broadbalk Wilderness. *See* Uncultivated soils
- Bumblebees as crop pollinators, 185, 186, 192
- Cercospora herpotrichoides*. *See* Wheat, eyespot
- Clover
foraging of bees on, 192, 194
irrigation for, 160
pollination requirements, 185
- Docking disorder of sugar beet
areas affected in England, 221, 224–226
control of, 227–234
effect of 'D-D' on, 219
effect of hoof and horn on, 228
effect of isobutyridene diurea on, 228
effect of kieserite on, 228
effect of nutrition on, 227
effect of 'shoddy' on, 219, 228
effect of soil moisture on, 226
effect of soil type on, 225
fungi and, 219
history of, 219–221
nematicides for, 229–234
nematodes involved in, 220
symptoms of, 220
- Drainage water at Saxmundham and Woburn
ammonium-N in, 42, 44, 45, 53
Ca, Mg, Na and K in, 43, 44, 46, 47, 52, 53
comparison of Rothamsted, Woburn and Saxmundham, 49, 59
composition of water on land surface, 59, 60
effect of nitrate on composition, 56
effects of storage on composition, 58
effects of weather on, 37, 40, 41
methods of analysis, 65
nitrate in, 42, 44, 45, 47, 48, 78
nutrients in, 42–47, 51–55
pH and conductivity, 44, 47, 55, 56
phosphorus, sulphate and chloride in, 42, 44, 45, 47, 54, 55
rates of flow, 40
relationship to rainfall and soil temperature, 37, 40, 41
removal of crop nutrients in, 59
surface water at Saxmundham, 59
- Formalin
comparison with other fumigants, 145
direct and residual effects on take-all, 138–142, 143, 145
effect of repeated treatment, 144
effect on eyespot, 143, 145
effect on fungi in crop debris, 145
effect on *Fusarium* spp., 143
effect on mineralisation of N, 144
effect on *Pythium*, 143
effect on *Rhizoctonia solani*, 143
- Fruit trees
foraging of bees on, 190–194
pollination of, 184, 190
- Fusarium* spp.
effect of formalin on, 143
- Geescroft Wilderness. *See* Uncultivated soils
- Honeybees (*Apis mellifera*)
Acarapis woodi on, 171, 173, 176
'Acarine disease', 171, 176
acute bee-paralysis virus, 172, 179–181
'Amoeba disease', 171, 176
chronic bee-paralysis virus, 172–176
crop pollination by, 184–198
effect of insecticides and herbicides on, 186
effect of queen and brood on pollen collection, 195, 196
feeding with sugar syrup, 188, 195
foraging, 187, 189, 190, 192, 193
fruit trees and pollination, 184, 190
Malpighamoeba mellificae on, 171
Nasonov scent gland of, 189
nectar and pollen attractiveness to, 189
nectar and pollen gatherers, 192
Nosema apis on, 171
'Nosema disease', 171, 176
pollinating efficiency of, 192
'robber' bees, 192
sacbrood virus, 176–178
size of colonies needed for pollination, 186
virus diseases of, 171–183
- Insect survey
insects in light traps, 238, 246–253
insects in suction traps, 237, 239–245
weekly bulletins, 237
- Irrigation
at Woburn, 147–170
for crops grown in rotation, 160
in Britain, 147
maximum response, 150, 167
need, calculation of, 148, 149, 167–168
on barley, 164
on beans, 166
on leys, 151–160
on potatoes, 161
on spring wheat, 165
on sugar beet, 162
nitrogen fertilisers and, 151–160
- Legumes, irrigation for, 159, 160
- Leys, irrigation on, 151–160
- Lime
effect on barley, 98, 101, 103, 109–111
effect on beans, 98–100
effect on crop composition, 103
effect on potatoes, 98, 102, 103, 112

INDEX

- Lime (contd):**
 effect on soil pH, 103, 105
 interactions with P and K fertilisers, 98, 100–104, 108–110
 interactions with simazine, 98, 100
 lime-induced potassium deficiency, 102
 long-term experiments, 98–112
 losses from soil, 105
- Limiting deficit of soil moisture, 150**
- Longidorus* spp. and Docking disorder of sugar beet, 219–234**
 bionomics of, 224
 description of, 222
 distribution of, 224
 effect of nematicides on, 229
 effect of plant nutrition on, 227
 effect of soil type on distribution, 225
 numbers in soil, 222
 See also Docking disorder and Nematodes
- Manganese**
 effect of liming on content of barley, 103
 toxicity in acid soils, 103
- Mangolds in Saxmundham Rotation I experiment, 71**
- Nematodes**
 Docking disorder in sugar beet and, 219–236
 effect of soil fumigation on, 138, 142, 219, 229–234
 extraction of from soil, 223
Heterodera avenae, effect of soil fumigation on, 138, 142
Hemicycliophora similis on sugar beet, 223
 nematicides, 229–234
 on Little Knot, 138
 other than *Longidorus* spp. and *Trichodorus* spp.
 associated with Docking disorder, 223
 See also *Longidorus* spp. and *Trichodorus* spp.
- Ophiobolus graminis*. See Take-all of wheat**
- Phosphate**
 effects on potatoes, beans and barley, 100–104, 107–112
 interactions with liming, 100–103, 108–112
- Physical measurements on soils**
 correlation with mechanical and chemical properties, 7, 13
 dry slaking instability, 6, 8–34
 linear regression coefficients, 14, 17, 27
 methods of analysis, 6
 on arable and grassland soils, 5–35
 partial regression analysis, 26–31
 relationship with soil composition, 5–35
 relationship with soil nitrogen, 24, 25
 relevance to practical problems, 31
 reproducibility of on different soils, 9
 total mechanical slaking, 6, 8–34
 water slaking instability, 6, 8–34
- Pollination of crops**
 by blowflies, 186
 by bumblebees, 185, 186
 by honeybees, 184–198
 effect of insecticides and herbicides on, 186
 in glasshouses and cages, 185
 pollen availability, 188
 pollen collection, factors controlling, 195, 196
 pollen on bees' bodies, 191
 pollinating efficiency of flower visits, 192
 requirements of various crops, 184
 size of honeybee colonies needed, 186
- Polyphenoloxidases, *o*-quinones and, 200, 204, 215**
- Potassium**
 effects on potatoes, beans and barley, 100–104, 107–112
 interactions with liming, 100–104, 108–112
- Potatoes**
 composition of tubers, 103
 effect of lime, P and K on, 98, 102, 103, 112
- irrigation for, 161
 yields compared at Rothamsted, Saxmundham, Woburn and nationally, 93
- Potential evaporation, 148**
- Pythium* spp.**
 effect of formalin on, 143, 145, 146
- Quinones, natural occurrence, 199**
- o*-Quinones**
 adventitious production of, 207
 effect on nutritional value of proteins, 211
 enzymic formation of, 200–204
 formation during food preparation and storage, 211
 in melanin formation, 205–207
 metabolic processes and, 204
 polyphenoloxidases and, 200, 204, 215
 prevention of formation, 215
 reaction with amino acids, 202–203
 reaction with enzymes, 214
 reaction with indol-3-yl acetic acid (IAA), 214
 reaction with plant viruses, 214–215
 reaction with proteins, 203, 205, 211, 214
 reaction with reducing agents, 202
 reaction with thiol compounds, 214
 resistance to apple rots and scab, 208
 resistance to potato scab, 208
 resistance to *Verticillium* wilt, 208
 role in insect-cuticle formation, 204
 role in plant resistance, 207
 role in tanning of nematode membranes, 205
 role in tea fermentation, 212
 soil humus formation and, 210
- Rainfall**
 at Saxmundham, 39, 41, 47, 87–92
 at Woburn, 39, 40, 49
 composition of, 87
 nitrogen supplied by, 87, 130
 nutrients supplied by, 87, 130
 relationship to drainage, 37, 41, 44, 47
- Rhizoctonia solani***
 effect of formalin on, 143
 fangy roots in sugar beet and, 220
- Rotation I experiment at Saxmundham, 68–97**
 'classical' treatments, main effects of fertilisers, 70
 'classical' treatments, nutrients removed, 73
 'classical' treatments, yields, 69
 crop analyses, methods used, 95
 drainage water, loss of nitrate in, 78
 history of, 68
 new treatments, main effects of fertilisers, 74
 new treatments, nutrients removed, 79–81
 new treatments, yields, 75–81
 nutrients supplied by rainfall, 87
 soils, 81–88
 soil analyses, 81, 96
 weather, 88–92
 yields compared with Rothamsted, Woburn and nationally, 93
- Rothamsted**
 drainage water compared with Saxmundham and Woburn, 49
 insect survey, 237–253
 long-term liming experiments, 98–112
 yields compared with Saxmundham, Woburn and nationally, 93
 Wildernesses, accumulation of organic matter in soils, 113–137
 See also Uncultivated soils
- Sawyers, long-term liming experiment on, 98–112**
- Saxmundham**
 drainage water compared with Rothamsted and Woburn, 49
 drains, chemical composition of water from, 36–67
 rainfall at, 39, 41, 47, 87–92
 Rotation I experiment, 68–97
 surface water at, 59

INDEX

- weather at, 39, 40, 41, 49, 88–92
yields compared with Rothamsted, Woburn and nationally, 93
See also Rotation I experiment
- Simazine, interactions with liming, 98, 100
- Slaking of soil
dry slaking instability, 6, 8–34
methods of measuring, 6
of arable and grassland soils, 5–35
total mechanical slaking, 6, 8–34
visual assessment and measurement, 19
water slaking instability, 6, 8–34
- Soil analyses
methods used for physical measurements, 6
used in Broadbalk and Geescroft Wildernesses, 118
used in Rotation I experiment, Saxmundham, 81, 96
- Soil composition, physical measurements and, 5
See also Physical measurements on soils
- Soil fumigation
comparison of fumigants, 145
effect of repeated treatment, 144
effect on fungi in plant debris, 145
effect on mineralisation of N, 144
effect on nematodes, 138, 142
effect on take-all of wheat, 138–146
for Docking disorder of sugar beet, 219, 229–234
on Little Knott, 138
on Pastures, 138
plastic sheets for sealing soil surface, 146
residual effect of, 232
root rots of wheat and, 138–146
row fumigation, 231, 233
- Soil heterogeneity, 106
- Soil instability
effect of mechanical composition, 7, 10, 11, 13, 17, 25
effect of organic matter, 7, 10, 11, 12
physical measurements of, 6, 8–34
- Soil organic matter
accumulation in uncultivated soil, 113–137
effect on soil instability, 7, 10, 11, 12
- Soil pH
effect of liming on, 103, 105
exchangeable Ca and, 105
in long-term liming experiments, 99, 101, 105, 110, 112
methods of measuring, 6, 66, 96, 118
of drainage water at Saxmundham, 44, 47, 56
of Wilderness soils, 124
- Soil strength
effect of mechanical composition on, 10–17
effect of organic matter on, 12, 21, 23
of arable and grassland soils, 8–15, 21–26, 30
- Strawberry
foraging of bees on, 193
pollination requirements, 185
- Sugar beet
Docking disorder of, 219–236
in Saxmundham Rotation I experiment, 70–79, 93
irrigation for, 162
yields compared at Rothamsted, Saxmundham, Woburn and nationally, 93
See also Docking disorder
- Sunflower
foraging of bees on, 192, 194
pollination requirements, 184
- Take-all of wheat (*Ophiobolus graminis*)
effect of N fertilisers on, 138, 140
effect of soil fumigation on, 138–146
interaction with P and lime, 109
on Little Knott, 138
on Pastures, 138
- Trichodorus* spp. and Docking disorder of sugar beet, 219–234
bionomics, of, 224
description of, 222
distribution of, 224
effect of nematicides on, 229
effect of plant nutrition on, 227
effect of soil type on distribution, 225
numbers in soil, 222
See also Docking disorder and Nematodes
- Uncultivated soils on Broadbalk and Geescroft Wildernesses
analytical methods on, 118
changes in soils from 1881 to 1964, 124
history of, 113
mechanical composition of, 115
mineralisation of nitrogen and carbon in, 127
nitrogen in, 119, 124, 130–133
nutrient accumulation in, 122
organic carbon in, 124, 129
organic-matter accumulation in, 113–137
pH changes in, 124
phosphorus in, 125, 126
soil expansion in, 121
soil profile descriptions, 134
soil sampling of, 114
soils of, 114–135
sulphur in, 125, 133
tree measurement on, 116, 128
- Weather
at Saxmundham, 37, 39, 41, 47, 88–92
at Woburn, 37, 39, 40, 49
effects on drainage, 37, 40, 41
effects on irrigation need, 148, 162, 166, 167
- Wheat
effect of soil fumigation on, 138–146
eyespot, 138, 143
in Saxmundham Rotation I experiment, 69–79, 93
irrigation for, 165
root rots, 138–146
take-all, 109, 138–146
- Wilderness soils. *See* Uncultivated soils
- Woburn
drainage water compared with Rothamsted and Saxmundham, 49
drains, chemical composition of water from, 36
irrigation experiments at, 147–170
liming experiments, 98–112
weather at, 37, 39, 40, 49
yields compared with Rothamsted, Saxmundham and nationally, 93